

## CLAIMS

1. An electrochemical sensor including:

a base member which has a porous, sheet-like shape and is hydrophobic as well as gas permeable;

a detection electrode which is included in the base member and contains a catalyst and hydrophobic resin;

a reference electrode and a counter electrode, each of which contains a catalyst and hydrophobic resin; and

an electrolytic solution retainer which has a sheet-like shape and is hydrophilic as well as electrically insulating, said electrolytic solution retainer being provided with either one of or both the reference electrode and the counter electrode.

2. An electrochemical sensor as claimed in claim 1, wherein:

the reference electrode and the counter electrode are formed on one of the planar surfaces of the electrolytic solution retainer.

3. An electrochemical sensor as claimed in claim 1, wherein:

the reference electrode is formed on one of the planar surfaces of the electrolytic solution retainer, and the counter electrode is formed on the other planar surface of the electrolytic solution retainer.

4. An electrochemical sensor as claimed in claim 1, wherein:

the reference electrode and the counter electrode are formed of the same material on the electrolytic solution retainer.

5. An electrochemical sensor including:

a case having an electrolytic solution storage;

a cap adapted to be fitted to the case;

a cell adapted to be contained in the case by means of said cap and including:

a base member which has a porous, sheet-like shape and is hydrophobic as well as gas permeable,

a detection electrode which is included in the base member and contains a catalyst and hydrophobic resin,

a reference electrode and a counter electrode, each of which contains a catalyst and hydrophobic resin; and

an electrolytic solution retainer which has a sheet-like shape and is hydrophilic as well as electrically insulating, said electrolytic solution retainer being provided with either one of or both the reference electrode and the counter electrode; and

electrode pins which are included in either one of or both the case and the cap and adapted to be connected to said cell.

6. An electrochemical sensor as claimed in claim 5, wherein:

the electrochemical sensor further includes at least one post element that is located inside the electrolytic solution storage of the case and provided with one or more grooves adapted to guide the electrolytic solution contained in the electrolytic solution storage to the electrolytic solution retainer of the cell.

7. An electrochemical sensor as claimed in claim 5, wherein:

the electrochemical sensor further includes a plurality of post elements adapted to support the cell, which is contained in the electrolytic solution storage of the case, and

one or more of said post elements are provided with grooves adapted to guide the electrolytic solution contained in the electrolytic solution storage to the electrolytic solution retainer of the cell.

8. An electrochemical sensor as claimed in claim 1 or claim 5, wherein:

the electrolytic solution retainer is formed of glass wool.

9. An electrochemical sensor as claimed in claim 5, wherein:

the electrochemical sensor further includes a porous sheet which is hydrophobic as well as gas permeable and contained in said case in such a state as to be in contact with the electrolytic solution storage of the case and the base member positioned in the case.

10. An electrochemical sensor including:

a case having an electrolytic solution storage adapted to store therein electrolytic solution that contains sulfuric acid;

a cap adapted to be fitted to the case;

electrodes consisting of a detection electrode, a reference electrode, and a counter electrode, each of which is adapted to be contained in either the case or the cap; and

electrode pins formed of tantalum or an alloy containing tantalum, each electrode pin having:

a contact portion adapted to secure each respective one of said electrodes, i.e. the detection electrode, the reference electrode, or the counter

electrode, in the case or the cap in such a state as to be in contact with the electrode, and

a lead portion that is drawn out of either the case or the cap,

wherein the contact portion and the lead portion of each electrode pin is formed as a seamless, integral body.

11. An electrochemical sensor as claimed in claim 10, wherein:

the electrode pins are formed integrally with either one of the case or the cap.

12. An electrochemical sensor as claimed in claim 10, wherein:

each electrode pin has at least one bent portion to immovably hold each respective one of the detection electrode, the reference electrode, or the counter electrode in either the case or the cap.

13. An electrochemical sensor as claimed in claim 10, wherein:

the electrode pins are formed integrally with the case by molding.